

## AMENDMENTS TO THE SPECIFICATION:

Please amend the specification as follows:

Please substitute the paragraph beginning at page 2, line 12, and ending on page 3, line 2, with the following.

-- For example, a fluorine excimer laser has been applied to an exposure apparatus because of a short wavelength of 157 nm. The 157 nm wavelength falls within a wavelength region generally called a vacuum ultraviolet region. In this wavelength region, light is greatly absorbed by oxygen molecules, and hardly passes through air. Thus, the fluorine excimer laser can only be used in an environment in which the atmospheric pressure is decreased to almost vacuum and the oxygen concentration is fully decreased. The absorption coefficient of oxygen to 157 nm light is about  $190 \text{ atm}^{-1} \text{ cm}^{-1}$  (e.g., "Photochemistry of Small Molecules" (Hideo Okabe, A Wiley Interscience Publication, 1978, p. 178)). This means that, when 157 nm light passes through gas at an oxygen concentration of 1% at one atmospheric pressure, the transmittance per cm is only

$$T = \exp(-190 \times 1 \text{ cm} \times 0.01 \text{ atm}) = 0.150. \text{ --}$$

Please substitute the paragraph beginning at page 3, line 9, with the following.

-- To prevent this, the oxygen concentration in the optical path is suppressed to a low level, of several ppm order or less, by a purge means using inert gas such as nitrogen in the optical path of the exposure optical system of a projection exposure apparatus using a far ultraviolet laser such as an ArF excimer laser or a fluorine (F2) excimer laser as a light source.--

Please substitute the paragraph beginning at page 3, line 16, with the following.

-- In such an exposure apparatus using an ArF excimer laser beam with a wavelength around far ultraviolet rays, particularly, 193 nm, or a fluorine (F2) excimer laser beam with a wavelength around 157 nm, an ArF excimer laser beam or fluorine (F2) excimer laser beam is readily absorbed by a substance. The optical path must be purged to several ppm order or less. This also applies to moisture, which must be removed to the ppm order or less. --

Please substitute the paragraph beginning at page 4, line 11, with the following.

-- As described above, an exposure apparatus using ultraviolet rays, particularly, an ArF excimer laser beam or fluorine (F2) excimer laser beam suffers from large absorption by oxygen and moisture at the wavelength of the ArF excimer laser beam or fluorine (F2) excimer laser beam. To obtain a sufficient transmittance and stability of ultraviolet rays, the oxygen and moisture concentrations must be reduced. --

Please substitute the paragraph beginning at page 6, line 19, with the following.

-- In a preferred embodiment, the exposure apparatus further ~~comprising~~ comprises gas supply means for supplying gas into an internal space of the partition wall. --

Please substitute the paragraph beginning at page 7, line 7, with the following.

-- In a preferred embodiment, the ~~another~~ other partition wall which forms the different closed space is arranged on a structure which is supported by an independently arranged vibration isolating mechanism. --

Please substitute the paragraph beginning at page 7, line 11, with the following.

-- In a preferred embodiment, the ~~another~~ other partition wall which forms the different closed space includes a partition wall which covers at least one of a wafer transfer system and a reticle transfer system. --

Please substitute the paragraph beginning at page 7, line 15, with the following.

-- In a preferred embodiment, the exposure apparatus further ~~comprising~~ comprises: --

Please substitute the paragraph beginning at page 7, line 27, and ending on page 8, line 1, with the following.

-- wherein the force actuator is arranged via a ~~through-hole~~ through-hole formed in the partition wall, and --

Please substitute the paragraph beginning at page 8, line 2, with the following.

-- an elastic seal member is used between the ~~through-hole~~ through-hole and the force actuator to keep the internal space of the partition wall airtight. --

Please substitute the paragraph beginning at page 8, line 13, with the following.

-- According to the ~~presenting~~ present invention, the foregoing object is attained by providing a semiconductor device manufacturing method of manufacturing a semiconductor device by using an exposure apparatus which transfers a mask pattern onto a substrate via a projection optical system, the method comprising: --

Please substitute the paragraph beginning at page 10, line 18, with the following.

-- Ultraviolet rays as exposure light used in the exposure apparatus of the present invention are not limited. As described in the BACKGROUND OF THE INVENTION section, the present invention is effective for far ultraviolet rays, particularly, an ArF excimer laser beam with a wavelength around 193 nm and a fluorine (F2) excimer laser beam with a wavelength around 157 nm. --

Please substitute the paragraph beginning at page 12, line 26, and ending on page 13, line 5, with the following.

-- The active damper A (9) is a vibration isolating mechanism which incorporates an air spring, a damper, and an actuator. The active damper A (9) prevents transmission of high frequency vibrations from the floor to the lens barrel surface plate 7, and actively compensates for the tilt or swing of the lens barrel surface plate 7. --

Please substitute the paragraph beginning at page 13, line 13, with the following.

A wafer as a substrate is set on the wafer stage 4. The position of the wafer stage 4 is measured by an interferometer (not shown), and can be driven in an optical axis direction Z of the projection optical system 6, X and Y directions perpendicular to the Z direction, and  $\omega_x$ ,  $\omega_y$ , and  $\omega_z$  directions around the axes. A linear motor is adopted as an alignment driving source. The wafer stage 4 basically comprises a two dimensional stage constituted by an X stage which moves straight in the X direction, an X linear motor, a Y stage which moves in the Y direction perpendicular to the X direction, and a Y linear motor. A stage capable of moving in the Z direction, tilt ( $\omega_X$  and  $\omega_Y$ ) directions, and rotational direction is mounted on the two dimensional stage. --

Please substitute the paragraph beginning at page 15, line 1, with the following.

-- The center of gravity of the wafer stage 4 and the force action point of the force actuator 14, which generates a thrust in the horizontal direction are flush with each other. Since a compensation force can be applied at the same level as a reaction force, the driving reaction force of the wafer stage 4 can be effectively canceled. The embodiment adopts a linear motor as the force actuator 14. --

Please substitute the paragraph beginning at page 15, line 11, with the following.

-- That is, the linear motor has a high control response and can control a generated force at high speed. In addition, the stationary and movable elements of the linear motor do not contact each other, and the force acts between them by a Lorentz force. While the noncontact

state is maintained by the Lorentz force, the driving reaction force of the wafer stage 4 can be transmitted from the stage base member 12 to the air conditioned equipment room 8. Because of noncontact, the linear motor also comprises a mechanical filter function of cutting off transmission of vibrations. --

Please substitute the paragraph beginning at page 17, line 16, and ending on page 18, line 2, with the following.

-- As shown in Figs. 1 to 3, a box like partition wall A (23) is interposed between the lens barrel surface plate 7 and the wafer stage 4. The partition wall A (23) is supported by a support member 24 from the base frame 2. The partition wall A (23) has openings in the upper and lower surfaces. The upper opening and the facing lower surface of the lens barrel surface plate 7 are airtightly joined by a band like elastic seal member 25. The force actuator 14 is arranged via a ~~through-hole~~ through-hole formed in the side surface of the partition wall A (23). An elastic seal member 250 is used between the ~~through-hole~~ through-hole and the force actuator to maintain airtightness in the internal space of the partition wall A (23). --

Please substitute the paragraph beginning at page 20, line 1, with the following.

-- The elastic seal member 28 is very flexible and can keep the interior of the partition wall B (32) airtight without transmitting vibrations of the chamber of the reticle transfer system 16<sub>2</sub> which swings by vibrations from the exposure apparatus installation floor, to the lens barrel surface plate 7 and reticle stage 3<sub>1</sub> which are supported by the active dampers A (9). --

Please substitute the paragraph beginning at page 20, line 11, with the following.

-- With this arrangement, the optical path of exposure light that extends from the illumination optical system 5 to the projection optical system 6 via a reticle and the optical path of exposure light that extends from the projection optical system 6 to a wafer are purged with inert gas such as nitrogen having high transmittance even for far ultraviolet rays such as an ArF excimer laser beam or a fluorine (F2) excimer laser beam. --

Please substitute the paragraph beginning at page 21, line 16, with the following.

-- As described above, according to the embodiment, the exposure apparatus comprises a structure which ~~are~~ is supported by a vibration isolating mechanism (active dampers A (9) and active dampers B (13)) and constitutes an exposure apparatus main body, and a partition wall (partition wall A (23) and partition wall B (32)), which are arranged independently of the structure. The structure and partition wall are coupled by an elastic seal member (25 to 28, 250, and 270) to form a closed space so as to partition the interior of the partition wall from the remaining space. --

Please substitute the paragraph beginning at page 22, line 20, with the following.

-- [Application of the Exposure Apparatus] --

Please substitute the paragraph beginning at page 22, line 26, and ending on page 23, line 6, with the following.

-- In step 1 (circuit design), the circuit of a semiconductor device is designed. In step 2 (mask formation), a mask is formed on the basis of the designed circuit pattern. In step 3 (wafer formation), a wafer is formed using a material such as silicon. In step 4 (wafer process), called a pre process, an actual circuit is formed on the wafer by lithography using the mask and wafer. --

Please substitute the paragraph beginning at page 23, line 7, with the following.

-- Step 5 (assembly), called a post process, is the step of forming a semiconductor chip by using the wafer formed in step 4, and includes an assembly process (dicing and bonding) and a packaging process (chip encapsulation). In step 6 (inspection), the semiconductor device manufactured in step 5 undergoes inspections such as an operation confirmation test and a durability test. After these steps, the semiconductor device is completed and shipped in step 7. --

Please substitute the paragraph beginning at page 23, line 18, and ending on page 24, line 5, with the following.

-- In step 11 (oxidation), the wafer surface is oxidized. In step 12 (CVD), an insulating film is formed on the wafer surface. In step 13 (electrode formation), an electrode is formed on the wafer by vapor deposition. In step 14 (ion implantation), ions are implanted in the wafer. In step 15 (resist processing), a photosensitive agent is applied to the wafer. In step 16 (exposure), the above mentioned exposure apparatus transfers a circuit pattern onto the wafer. In step 17 (developing), the exposed wafer is developed. In step 18 (etching), the resist is etched except for



the developed resist image. In step 19 (resist removal), an unnecessary resist after etching is removed. These steps are repeated to form multiple circuit patterns on the wafer. --